(iii) A detailed description of the utilization made of the in-orbit satellite system. That description should identify the percentage of time that the system is actually used for U.S. domestic or transborder transmission, the amount of capacity (if any) sold but not in service within U.S. territorial geographic areas, and the amount of unused system capacity; and

(iv) Identification of any space stations not available for service or otherwise not performing to specifications, the cause or causes of these difficulties, and the date any space station was taken out of service or the malfunction identified.

(2) All operators of 1.6/2.4 GHz mobile-satellite systems shall, within 10 days after a required implementation milestone as specified in the system authorization, certify to the Commission by affidavit that the milestone has been met or notify the Commssion by letter that it has not been met. At its discretion, the Commission may require the submission of additional information (supported by affidavit of a person or persons with knowledge thereof) to demonstrate that the milestone has been met.

(f) Safety and distress communications.

(1) Stations operating in the 1.6/2.4 GHz Mobile-Satellite Service that are voluntarily installed on a U.S. ship or are used to comply with any statute or regulatory equipment carriage requirements may also be subject to the requirements of sections 321(b) and 359 of the Communications Act of 1934. Licensees are advised that these provisions give priority to radio communications or signals relating to ships in distress and prohibits a charge for the transmission of maritime distress calls and related traffic.

(2) Licensees offering distress and safety services should coordinate with the appropriate search and rescue organizations responsible for the licensees service area.

(g) Considerations involving transfer or assignment applications.

(1) "Trafficking" in bare licenses issued pursuant to paragraph (a) of this section is prohibited, except with respect to licenses obtained through a competitive bidding procedure.

(2) The Commission will review a proposed transaction to determine if the circumstances indicate trafficking in licenses whenever applications (except those involving pro forma assignment or transfer of control) for consent to assignment of a license, or for transfer of control of a licensee, involve facilities licensed pursuant to paragraph (a) of this section. At its discretion, the Commission may require the submission of an affirmative, factual showing (supported by affidavits of a person or persons with personal knowledge thereof) to demonstrate that no

trafficking has occurred.

(3) If a proposed transfer of radio facilities is incidental to a sale of other facilities or merger of interests, any showing requested under paragraph (g)(2) of this section shall include an additional exhibit which:

(i) Discloses complete details as to the sale of facilities or merger of interests;

(ii) Segregates clearly by an itemized accounting, the amount of consideration involved in the sale of facilities or merger of interests; and

(iii) Demonstrates that the amount of consideration assignable to the facilities or business interests involved represents their fair market value at the time of the transaction.

11. Section 25.201 is amended by adding new paragraphs, in alphabetical order, to read as follows:

**§ 25.201 Definitions.**

* * * * *

Mobile-Satellite Service. A radiocommunication service: (1) Between mobile earth stations and one or more space stations, or between space stations used by this service; or (2) Between mobile earth stations by means of one or more space stations. This service may also include feeder links necessary for its operation. (RR)

* * * * *

1.6/2.4 GHz Mobile-Satellite Service. A mobile-satellite service that operates in the 1610-1626.5 MHz and 2483.5-2500 MHz frequency bands, or in any portion thereof.

* * * * *

12. Section 25.202 is amended by adding new paragraphs (a)(4) and (a)(5) to read as follows:

**§ 25.202. Frequencies, frequency tolerance and emission limitations.**

* * * * *

(a) * * *

(4) The following frequencies are available for use by the 1.6/2.4 GHz Mobile-Satellite Service:

| | |
|---|---|
| 1610-1626.5 MHz: | User-to-Satellite Link |
| 1613.8-1626.5 MHz: | Satellite-to-User Link (secondary) |
| 2483.5-2500 MHz: | Satellite-to-User Link |

(5) The following frequencies are available for use by the inter-satellite service:

22.55-23.00 GHz
23.00-23.55 GHz
24.45-24.65 GHz
24.65-24.75 GHz

13. Section 25.203 is amended by revising paragraph (c)(2)(vii) and adding new subsections (j) and (k) to read as follows:

**§ 25.203 Choice of sites and frequencies.**

* * * * *

(c) * * *

(2)(vii) Antenna horizon gain plot(s) determined in accordance with § 25.253(b) for satellite longitude range specified in paragraph (c)(2)(v) of this section, taking into account the provisions of § 25.253(a)(2) for earth stations operating with non-geostationary satellites.

* * * * *

(j) Applicants for non-geostationary 1.6/2.4 GHz Mobile-Satellite Service/ radiodetermination satellite service feeder links shall indicate the frequencies and spacecraft antenna gain contours towards each feeder-link earth station location and will coordinate with licensees of other fixed-satellite service and terrestrial-service systems sharing the band to determine geographic protection areas around each non-geostationary mobile-satellite service/ radiodetermination satellite service feeder link earth station.

(k) An applicant for a non-geostationary 1.6/2.4 GHz Mobile-Satellite Service space station or earth station that will operate with a geostationary satellite or non-geostationary satellite in a shared frequency band in which the non-geostationary system is (or is proposed to be) licensed for feeder links, shall demonstrate in its application that its proposed space or earth station will not cause unacceptable interference to any other satellite network that is authorized to operate in the same frequency band, or certify that the operations of its space or earth station shall conform to established coordination agreements between the operator(s) of the space station(s) with which the earth station is

to communicate and the operator(s) of any other U.S. space station licensed to use the band.

14. Section 25.208 is amended by revising paragraph (c) to read as follows:

**§ 25.208 Power flux density limits.**

(c) In the 17.7-19.7 GHz, 22.55-23.00 GHz, 23.00-23.55 GHz, and 24.45-24.75 GHz frequency bands, the power flux density at the Earth's surface produced by emissions from a space station for all conditions and for all methods of modulation shall not exceed the following values:

-115 dB($W/m^2$) in any 1 MHz band for angles of arrival between 0 and 5 degrees above the horizontal plane.

-115 + 0.5 (d-5) dB ($W/m^2$) in any 1 MHz band for angles of arrival d (in degrees) between 5 and 25 degrees above the horizontal plane.

-105 dB ($W/m^2$) in any 1 MHz band for angles of arrival between 25 and 90 degrees above the horizontal plane.

15. A new Section 25.213 is added to read as follows:

**§ 25.213 Inter-Service coordination requirements for the 1.6/2.4 GHz Mobile-Satellite Service**

(a) Protection of the radio astronomy service in the 1610.6-1613.8 MHz band against interference from 1.6/2.4 GHz Mobile-Satellite Service systems.

(1) Protection zones. All 1.6/2.4 GHz Mobile-Satellite Service systems shall be capable of determining the position of the user transceivers accessing the space segment through either internal radiodetermination calculations or external sources such as LORAN-C or the Global Positioning System. During periods of radio astronomy observations, land mobile earth stations shall not operate when located within geographic protection zones defined by the radio observatory coordinates and separation distances as follows:

(i) In the band 1610.6-1613.8 MHz, within a 160 km radius of the following radio astronomy sites:

| Observatory | Latitude (DMS) | Longitude (DMS) |
|---|---|---|
| Arecibo, PR | 18 20 46 | 66 45 11 |
| Green Bank Telescope, WV | 38 25 59 | 79 50 24 |
| | 38 26 08 | 79 49 42 |
| Very Large Array, NM | 34 04 43 | 107 37 04 |
| Owens Valley, CA | 37 13 54 | 118 17 36 |
| Ohio State, OH | 40 15 06 | 83 02 54 |

(ii) In the band 1610.6-1613.8 MHz, within a 50 km radius of the following sites:

| Observatory | Latitude (DMS) | Longitude (DMS) |
|---|---|---|
| Pile Town, NM | 34 18 04 | 108 07 07 |
| Los Alamos, NM | 35 46 30 | 106 14 42 |
| Kitt Peak, AZ | 31 57 22 | 111 36 42 |
| Ft. Davis, TX | 30 38 06 | 103 56 39 |
| N. Liberty, IA | 41 46 17 | 91 34 26 |
| Brewster, WA | 48 07 53 | 119 40 55 |
| Owens Valley, CA | 37 13 54 | 118 16 34 |
| St. Croix, VI | 17 45 31 | 64 35 03 |
| Mauna Kea, HI | 19 48 16 | 155 27 29 |
| Hancock, NH | 42 56 01 | 71 59 12 |

(iii) Out-of-band emissions of a mobile earth station licensed to operate within the 1610.0-1626.5 MHz band shall be attenuated so that the power flux density it produces in the 1610.6-1613.8 MHz band at any radio astronomy site listed in subparagraphs (i) or (ii) shall not exceed the emissions of a mobile earth station operating within the 1610.6-1613.8 MHz band at the edge of the protection zone applicable for that site. As an alternative, a mobile earth station shall not operate during radio astronomy observations within the 1613.8-1615.8 MHz band within 100 km of the radio astronomy sites listed in (i) above, and within 30 km of the sites listed in (ii) above, there being no restriction on a mobile earth station operating within the 1615.8-1626.5 MHz band.

(iv) For airborne mobile earth stations operating in the 1610.0-1626.5 MHz band, the separation distance shall be the larger of the distances specified in subparagraphs (i), (ii) or (iii), as applicable, or the distance, d, as given by the formula:

d (km) = 4.1 square root of (h)

where h is the altitude of the aircraft in meters above ground level.

(v) Smaller geographic protection zones may be used in lieu of the areas specified in subparagraphs (i), (ii), (iii), and (iv) of this paragraph if agreed to by the Mobile-Satellite Service licensee and the Electromagnetic Spectrum Management Unit (ESMU), National Science Foundation, Washington, D.C. upon a showing by the Mobile-Satellite Service licensee that the operation of a mobile earth station will not cause harmful interference to a radio astronomy observatory during periods of observation.

(vi) The ESMU shall notify Mobile-Satellite Service space station licensees authorized to operate mobile earth terminals in the 1610.0-1626.5 MHz band of periods of radio astronomy observations. The mobile-satellite systems shall be capable of terminating operations within the frequency bands and protection zones specified in subparagraphs (i)-(iv), as applicable, after the first position fix of the mobile earth terminal either prior to transmission or, based upon its location within the protection zone at the time of initial transmission of the mobile earth terminal. Once the mobile-satellite system determines that a mobile earth terminal is located within an RAS protection zone, the mobile-satellite system shall immediately initiate procedures to relocate the mobile earth terminal operations to a non-RAS frequency.

(vii) A beacon-actuated protection zone may be used in lieu of fixed protection zones in the 1610.6-1613.8 MHz band if a coordination agreement is reached between a mobile-satellite system licensee and the ESMU on the specifics of beacon operations.

(viii) Additional radio astronomy sites, not located within 100 miles of the 100 most populous urbanized areas as defined by the United States Census Bureau at the time, may be afforded similar protection one year after notice to the mobile-satellite system licensees by issuance of a public notice by the Commission.

(2) Mobile-Satellite Service space stations transmitting in the 1613.8-1626.5 MHz band shall take whatever steps necessary to avoid causing harmful interference to the radio astronomy facilities listed in subparagraphs (a)(1)(i)-(ii) of this section during periods of observation.

(3) Mobile-Satellite Service space stations operating in the 2483.5-2500 MHz frequency band shall limit spurious emission levels in the 4990-5000 MHz band so as not to exceed -241 dB(W/m$^2$/Hz) at the surface of the Earth.

(4) The Radioastronomy Service shall avoid scheduling radio astronomy observations during peak MSS/RDSS traffic periods to the greatest extent practicable.

(b) Protection of the radionavigation-satellite service. Mobile earth stations operating in the 1610-1626.5 MHz band shall limit out-of-band emissions in the 1574.397-1576.443 MHz band so as not to exceed an e.i.r.p. density level of -70 dB(W/MHz) averaged over any 20 ms period. The e.i.r.p. of any discrete spurious emission (i.e., bandwidth less than 600 Hz) in the 1574.397-1576.443 MHz band shall not exceed -80 dBW.

(c) Protection of aeronautical radionavigation systems. Mobile-satellite earth stations transmitting in the 1610-1626.5 MHz band shall limit e.i.r.p. levels to no greater than -15 dB (W/4kHz) on frequencies being used by systems operating in accordance with international Radio Regulation RR 732, and to no greater than -3 dB (W/4kHz) on frequencies that are not so being used. Pursuant to international RR 731E and RR 731F, respectively, all mobile-satellite Earth-to-space operations in the 1610-1626.5 MHz band and mobile-satellite space-to-Earth operations in the 1613.8-1626.5 MHz band must be coordinated and notified under the procedures set forth in Resolution 46 (WARC-92). Such mobile-satellite stations shall not cause harmful interference to, or claim protection from, stations in the aeronautical radionavigation service and stations operating pursuant to international RR 732.

(d) Fixed stations operating pursuant to international Radio Regulation RR 730. Pursuant to international Radio Regulations RR 731E and RR 731F, all mobile-satellite operations in the 1610-1626.5 MHz band (Earth-to-space transmissions) and all operations in the 1613.8-1626.5 MHz band (space-to-Earth transmissions), respectively, must be coordinated with systems operating pursuant to international RR 730 according to the coordination and notification procedures set forth in Resolution 46 (WARC-92). All such mobile-satellite stations shall not cause harmful interference to, or claim protection from, stations in the fixed service operating pursuant to international RR 730.

16. A new Section 25.278 is added to read as follows:

**§ 25.278 Additional coordination obligation for non-geostationary and geostationary satellite systems in frequencies allocated to the Fixed-Satellite Service.**

Licensees of non-geostationary satellite systems that use frequency bands allocated to the fixed-satellite service for their feeder link operations shall coordinate their operations with licensees of geostationary fixed-satellite service systems licensed by the Commission for operation in the same frequency bands. Licensees of geostationary fixed-satellite service systems in the frequency bands that are licensed to non-geostationary satellite systems for feeder link operations shall coordinate their operations with the licensees of such non-geostationary satellite systems.

17. A new section 25.279 is added to read as follows:

**§ 25.279 Inter-satellite service.**

(1) Any non-geostationary satellite communicating with other space stations may use frequencies in the inter-satellite service as indicated in § 2.106. This does not preclude the use of other frequencies for such purposes as provided for in several service definitions, e.g., FSS. The technical details of the proposed inter-satellite link shall be provided in accordance with § 25.114(c).

(2) Operating conditions. In order to ensure compatible operations with authorized users in the frequency bands to be utilized for operations in the inter-satellite service, these inter-satellite service systems must operate in accordance with the conditions specified in this section.

(a) Coordination requirements with federal government users.

(i) In frequency bands allocated for use by the inter-satellite service that are also authorized for use by agencies of the federal government, the federal use of frequencies in the inter-satellite service frequency bands is under the regulatory jurisdiction of the National Telecommunications and Information Administration (NTIA).

(ii) The Commission will use its existing procedures to reach agreement with NTIA to achieve compatible operations between federal government users under the jurisdiction of NTIA and inter-satellite service systems through frequency assignment and coordination practice established by NTIA and the Interdepartment Radio Advisory Committee (IRAC). In order to facilitate such frequency assignment and coordination, applicants shall provide the Commission with sufficient information to evaluate electromagnetic compatibility with the federal government users of the spectrum, and any additional information requested by the Commission. As part of the coordination process, applicants shall show that they will not cause interference to authorized federal government users, based upon existing system information provided by the government. The frequency assignment and coordination of the satellite system shall be completed prior to grant of construction authorization.

(b) Coordination among inter-satellite service systems. Applicants for authority to establish inter-satellite service are encouraged to coordinate their proposed frequency usage with existing permittees and licensees in the inter-satellite service whose facilities could be affected by the new proposal in terms of frequency interference or restricted system capacity. All affected applicants, permittees, and licensees, shall at the direction of the Commission, cooperate fully and make every reasonable effort to resolve technical problems and conflicts that may inhibit effective and efficient use of the radio spectrum; however, the permittee or licensee being coordinated with is not obligated to suggest changes or re-engineer an applicant's proposal in cases involving conflicts.

18. The authority citation for Part 94 continues to read as follows:

**AUTHORITY: Secs. 4, 303, 48 Stat., as amended, 1066, 1082; 47 U.S.C. 154, 303, unless otherwise noted.**

19. Section 94.61 is amended by revising paragraph (b)(4) to read as follows:

**§ 94.61 Applicability.**

* * * * *

(b)(4) Frequencies in this band are shared with mobile and radiolocation stations in other services, and must accept harmful interference that may be experienced from operations of industrial, scientific, or medical (ISM) equipment operating on 2450 MHz. In the 2483.5-2500 MHz band, no applications for new stations or modifications to existing stations to increase the number of transmitters will be accepted. Existing licensees as of July 25, 1985, are grandfathered and their operation is co-primary with the Radiodetermination Satellite Service and Mobile-Satellite Service. However, all grandfathered temporary fixed licensees are required to notify directly each Radiodetermination Satellite Service and Mobile-Satellite Service licenses concerning present and proposed locations of operations.